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[Overview of Reviews Protocol]

Yoga for schizophrenia

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ABSTRACT

This is a protocol for a Cochrane Review (Overview). The objectives are as follows:

Overall objective

To systematically summarise best evidence on the effects and safety of yoga for people with schizophrenia.

Primary objective

To summarise evidence from Cochrane systematic reviews on the effects of yoga for people with schizophrenia.

Secondary objectives

If Cochrane systematic reviews have not covered a relevant comparison, we aim:

1. to summarise evidence from non-Cochrane systematic reviews - which do not substantially overlap with the relevant Cochrane systematic reviews - on the effects and safety of yoga for people with schizophrenia;

2. to systematically identify gaps - though identification of relevant narrative reviews - in the evidence base that will inform recommendations for new reviews and trials; and

3. to summarise information on reported outcomes and make recommendations for the reporting of standard outcomes in future trials and reviews.

BACKGROUND

Description of the condition

Schizophrenia is a relatively common severe mental disorder which affects approximately 24 million people worldwide (Abi-Dargham 2014), with a lifetime prevalence of 0.3% to 0.6% and incidence of 10.2 to 22.0 per 100,000 people (McGrath 2008). Schizophrenia is characterised by a constellation of symptoms that can present in a wide variety of ways depending on the person. Core features or symptoms can broadly be divided into positive symptoms and negative symptoms. Positive symptoms include delusions, hallucinations, disorganised speech and disorganised behaviour. Negative symptoms include anhedonia (lack of pleasure), alogia (reduced speech), affective flattening (lack of emotional responsiveness), poor motivation and social withdrawal (Owen 2016). Additionally, while they are not included in the current *International Classification of Diseases, Tenth Revision* (ICD-10) or *Diagnostic and Statistical Manual of Mental Disorders - 5th Edition* (DSM-5) diagnostic systems as diagnostic criteria, characteristic cognitive deficits are widely recognised in schizophrenia and are the target of considerable clinical and research attention (Carbon 2014).

Schizophrenia carries a high morbidity and mortality, and there is a widening of the life expectancy gap in comparison with the general population (Lawrence 2013). This disorder is associated with a weighted mean of 14.5 years of potential life lost (95% confidence interval (CI) 11.2 to 17.8), which is higher for men than women (Hjorthoj 2017), and ranks 11th in the causes of years lived with disability worldwide (Global Burden of Disease Study 2013). It is well documented that people with schizophrenia experience high levels of type II diabetes (Stubbs 2015) and cardiovascular disease (Gardner-Sood 2015), which, combined, account for the majority of premature mortality deaths in this group (Lawrence 2013). A precursor of these conditions, known as 'metabolic syndrome,' is also prevalent among people with schizophrenia (Mitchell 2013; Vancampfort 2015).

The mainstay of treatment is antipsychotic medication (Owen 2016). One review highlighted that antipsychotic medication was associated with an increased risk for several physical illnesses, such as obesity, diabetes mellitus, cardiovascular, respiratory tract, gastrointestinal, haematological as well as movement and seizure disorders (Correll 2015). Although antipsychotic medication is effective in reducing positive symptoms (Leucht 2013), it is of less benefit for negative symptoms (Fusar-Poli 2015) and cognitive deficits (Nielsen 2015). Unfortunately, it is the negative and cognitive symptoms that cause most disability (Vancampfort 2011; Vancampfort 2012a). The adverse effect profiles and inherent limitations of antipsychotic medications have resulted in additional non-pharmacological interventions being utilised as either an adjunct or alternative to medication (Kern 2009). Low-cost treatments that decrease negative symptoms, reduce cognitive deficits and promote mental and physical quality of life and functional recovery are warranted.

Description of the interventions

1. Yoga

1.1. Description

Yoga originated from India as an ancient Hindu practice incorporating physical postures with breathing exercises, meditation and lifestyle advice seeking to bring about a balance between the mental and physical state (Feuerstein 1998; Iyengar 1966). Yoga originated as early as 3000 B.C. and has a long and noble history (Feuerstein 1998; Sengupta 2012). In Western societies, this 'multicomponent discipline' (Khalsa 2013), mainly includes postures *(asanas)* which improve strength, flexibility, co-ordination and endurance, and breathing exercises (*pranayama*) which improve respiratory control and concentration (De Michelis 2005). Other elements which are traditionally incorporated consist of meditation (*dhyana*), energy awakening, alignment, flexibility, chanting and singing, and word repetition (Kirkwood 2005). While meditation is the core of traditional yoga (Feuerstein 1998), it tends not to be a predominant element of yoga practice for people with schizophrenia. This may be related to an older study which highlighted possible limitations of meditation for people with schizophrenia (Walsh 1979). Most modern yoga schools are mainly influenced by the principles first described by Pañntajali, which are believed to allow the mind and the body to be prepared for spiritual development (Ross 2012). In the Western world, a secular practice of yoga has now been widely adopted and is considered under the umbrella of complementary and alternative medicine as a method of relaxation and exercise for physical fitness and psychological well-being (Khalsa 2013).

Yoga is a heterogeneous practice and has evolved into many different 'schools' of practice. Hatha yoga, an umbrella category for more physically oriented yoga forms, is the most widely adopted practice used in the Western world (Collins 1998). This type of yoga practice emphasises postures, which are to be done slowly to improve strength, flexibility, co-ordination and endurance, and uses breathing exercises to improve respiratory control and concentration. In Iyengar yoga the focus is directed towards bodily alignment via postures and incorporates belts and blocks as adjuncts to assume, maintain or improve postures (Iyengar 1966). Others include, but are not limited to, Vinysasa, Ashtanga, Bikram and Kundalini schools of yoga practice. Mantra yoga is another well-known and widely practiced form of Hindu yoga and focuses on the use of chants to achieve mental and spiritual transformation (Sherman 2012). One review found no significant difference in effects between alternate yoga styles (Cramer 2016a).

The prevalence of yoga use is difficult to estimate fully. A comprehensive survey of US yoga patterns and use including more than 34,000 people reported a lifetime prevalence of yoga use as 31.2% and 12-month prevalence as 8.9% equating to 31 million people had even used yoga and 21 million people had practised yoga in the previous 12 months (Cramer 2016b). At odds with this relatively high rate of practice, figures for England were much lower (Ding 2014), which may be partly due to differing definitions of yoga practice and reporting methods. Uptake of yoga among people with schizophrenia is not well known. One Indian-based questionnaire study which included 100 people with schizophrenia in an outpatient setting reported that 32% had tried yoga in the past and 31% were continuing yoga practice (Govindaraj 2015). The transferability of these results to other settings is not known. Barriers to yoga practice for people with schizophrenia include accessibility and financial cost (Baspure 2012).

Bibliometric analyses of yoga as a therapeutic intervention have identified this burgeoning research field which highlights benefits of yoga across a large number of clinical areas, with the majority of studies published by Indian investigators in Indian journals (Cramer 2014a; Jeter 2015; Khalsa 2004). Yoga has also been shown to both reduce stress and improve cognitive function in healthy people (Bangalore 2012).

The possible benefits of yoga in other mental health conditions has led to research into the role of yoga as a complementary therapy for the management of schizophrenia (Cramer 2013a; Kirkwood 2005). One systematic review of randomised controlled trials indicated that yoga could also be of benefit as an add-on treatment to standard care by reducing both positive and negative symptoms of schizophrenia and improving the health-related quality of life of people with schizophrenia, although evidence was limited, as the review included only three trials (Vancampfort 2012b). One further review echoed the possible improvements in quality of life, but highlighted that long-term benefits are not known and the safety of the intervention was not reported (Cramer 2013b). More recently, it was demonstrated that yoga may also improve the cognitive subdomain of long-term memory in people with schizophrenia (Dauwan 2016).

1.2. Delivery

Yoga is most often administered in a group setting by a certified yoga instructor (Figure 1). Classes are often 45 to 90 minutes in duration and can be delivered as a 'programme' of a number of week, for instance a six-week programme, delivered once or twice weekly in a community setting (De Michelis 2005). Yoga can also be delivered on a more intensive basis, for instance daily or five days per week over a shorter period such as two weeks, a pattern that is more common in India than in Western societies. 'Drop-in' yoga classes are also available in come centres. Self-practice at home is generally encouraged but is not mandatary. For most yoga programmes, experience with the techniques is not a prerequisite and participants and skilled yoga instructors can pitch the class and techniques to suit the level of participants. Skilled and experienced yoga practitioners can progress their skill in 'advanced' level yoga classes. However, modern yoga therapy often strives to adapt the intervention to the person's specific needs in individual one-to-one sessions (Jeter 2015); however, this is not commonly reflected in clinical yoga research.

Figure 1. Yoga class.

2. Comparator interventions

Yoga can be delivered alone or combined with one or more other interventions as a package of care for people with schizophrenia. Active comparators to yoga could fall under the following two main headings.

2.1. Standard care

Yoga or yoga delivered as a package of care can be compared to standard care.

Yoga is generally considered 'non-standard care' for people with schizophrenia. We will define standard care as the care participants would normally receive or had previously received for the management of their schizophrenia, without yoga intervention. For people with schizophrenia, this normally includes a biological (medication) intervention plus additional psychological and social approaches to care. This often involves use of range of services including hospital stay, day hospital attendance, outpatient services, psychiatry and community psychiatric nursing involvement.

2.2. Non-standard care

Yoga or yoga delivered as a package of care can be compared to other non-standard care interventions. Legitimate non-standard comparators to yoga could fall under the broad headings of expressive therapies, talking therapies and other forms of exercise which are detailed in Table 1.

2.2.1. Expressive therapies

Expressive therapies include broad categories of art therapy, dance therapy, drama therapy, music therapy and writing therapy. These represent different approaches, but the uniting principal is that these forms of therapy take place within a patient-therapist relationship.

In art therapy, the person is directed to use a range of art materials to make images, and the focus is on the relation between the image, the creator and the therapist (Crawford 2007). Dance therapy is also sometimes referred to as dance-movement therapy (DMT) (Payne 2006), and has been used as a healing ritual since early human history, although there is no one particular therapeutic dance (Ren 2013). Drama therapists use games, storytelling and role-play (Crawford 2007). Music therapy is often perceived as a psychotherapeutic method in the sense that it addresses intra- and inter-psychic, as well as social, processes by using musical interaction as a means of communication, expression and transformation (Geretsegger 2017). Writing therapy uses the act of writing and processing the written word as a therapeutic tool.

2.2.2. Talking therapies

Talking therapies can be considered to consist of, but are not limited to; talking treatments, counselling, psychological therapies or treatments, and psychotherapies. Cognitive behaviour therapy (CBT) is one of the most well-recognised talking therapies. In CBT, links are made between the person's feelings and patterns of thinking, which underpin their distress. The participant is encouraged to take an active part in their therapy by using the following techniques (Jones 2012).

1. Challenging their habitual patterns of thinking.
2. Examining the evidence for and against their distressing beliefs.
3. Using reasoning abilities and personal experience to develop rational and personally acceptable alternative explanations and interpretations (Alford 1994), and to test these alternative explanations in real-world situations (Tarrier 1993).

2.2.3. Exercise

Exercise is a subset of physical activity that is planned, structured and repetitive, and has, as a final or an intermediate objective, the "improvement or maintenance of physical fitness" (Caspersen 1985). Exercise is intentional and has an aim of increasing one or more of the components of physical fitness (i.e. cardiorespiratory fitness, muscular strength and endurance, body composition, flexibility and neuromotor fitness), or physical activity, or improving a physical indicator such as blood pressure. Therefore, yoga can be considered a form of exercise. While purist yoga-only programmes are often delivered, yoga also has the potential to be delivered as a part of a multi-modal intervention. Exercise can be considered under the following headings; skill-related fitness, health-related fitness, body-mind fitness, as well as physical activities which are not specifically fitness focused.

How the intervention might work

1. Yoga

The exact mechanisms of action of yoga are not fully understood. Yoga has a role in regulating the autonomic nervous system (Vancampfort 2012b), decreasing sympathetic tone, creating a reaction that is the opposite to fight or flight reaction. There is a subsequent effect on the limbic system and hypothalamic pituitary axis leading to a reduction in blood cortisol levels (Devi 1986). This leads to a regulation of heart rate and blood pressure, which has obvious cardiovascular benefits (Damodaran 2002). Yoga also focuses on relaxed breathing and this internal concentration is thought to reduce stress by minimising mental focus on external stressors or threats (Bangalore 2012). The decrease in cortisol levels is also thought to be related to better control of blood glucose, cholesterol and total lipids (Cramer 2014b). Since antipsychotic medication for the treatment of schizophrenia is associated with dyslipidaemia, diabetes and obesity (Mitchell 2013), yoga may be a useful adjuvant to therapy to minimise these effects (Bangalore 2012). The improvement in the physical health of these patients

could have a direct improvement in their mental health. Yoga has a role in improving sleep (Collins 1998). There is also thought to be a role of oxytocin, a hormone related to improved mood, analogues of which have been suggested as possible treatment for schizophrenia (Bangalore 2012; Feifel 2011). Indeed, plasma levels of oxytocin are higher in people after practice of yoga (Vancampfort 2012b). Yoga can further influence gamma-aminobutyric acid (GABA) (Streeter 2010) and monoamine metabolism (Devi 1986; Kjaer 2002), which are thought to be involved in schizophrenia pathophysiology. Yoga breathing requires deep inhalation, which is thought to be a calming, mindful activity that can decrease stress (Cabral 2011).

2. Comparators

2.1. Expressive therapies

As expressive therapy consists of broad categories of art, dance, drama, music, and writing therapies, the effects of these treatments are diverse and not fully known. It is unclear whether the healing aspect of therapy is the process of the actual expressive therapy, the relationship that develops between the therapist and the patient, or most likely, a complex fusion of the two. Generally, research into the physiological and biochemical effects of these therapies in schizophrenia is in its infancy. From a social and emotional perspective, music therapy, for example, can have particular motivating, relationship-building and emotionally expressive qualities that may help people who do not respond to verbal therapy (Rolvsjord 2001; Solli 2008), while dance therapy can stimulate and release feelings, enable communication and enhance non-verbal contact. In addition, the non-critical therapeutic setting can decrease anxiety (Ren 2013).

2.2. Talking therapies

Talking therapies are a diverse set of treatments that can be considered under the following broad categories; cognitive-behavioural, humanistic, insight-oriented, postmodernist, systemic and other, and are, therefore, associated with a broad range of effects, some of which are not fully understood. CBT, for instance, aims to offset distressing emotional experiences or dysfunctional behaviour by changing the way in which the individual interprets and evaluates the experience or cognates on its consequence and meaning (Jones 2012). Normalisation techniques as well as behavioural techniques are used to reduce distress and improve functioning (Naeem 2015). It has been proposed that CBT might also focus on the following (Birchwood 2006).

1. Distress reduction or the reduction of depression and problem behaviour associated with beliefs about psychotic symptomatology.
2. Emotional and interpersonal difficulties in people at high risk of developing psychosis.
3. Relapse prodromes to prevent relapse in psychosis.
4. Comorbid depression and social anxiety, including the person's appraisal of the diagnosis and its stigmatising consequences.
5. General stress reactivity, thereby increasing resilience to life stress and preventing psychotic relapse.
6. Increasing self-esteem and social confidence in people with psychosis.

2.3. Exercise

Mechanisms explaining the beneficial effects of exercise in people with schizophrenia are not fully elucidated. At present, the plausible mechanisms for change in positive and negative symptoms through exercise fall into one of two broad testable hypotheses: 1. biochemical changes such as increased levels of neurotransmitters (e.g. endorphins, dopamine or serotonin), which could be tested in schizophrenia-like animal models, and 2. psychological changes such as social support, sense of autonomy, improved perceptions of competence, enhanced body image, self-efficacy and distraction (Vancampfort 2014). Cardiometabolic and neurochemical pathways between skeletal muscle, the spinal cord, and the brain offer plausible, testable mechanisms that might help explain the effects of exercise on brain health in people with schizophrenia. Previous research demonstrated that changes in hippocampal volume and cortical thickening (or less thinning) following aerobic exercise were correlated with improvements in aerobic fitness measured by change in maximum oxygen consumption (Vancampfort 2014). The underlying mechanisms of brain volume increases resulting from improved aerobic fitness are still unknown, but increased production of brain-derived neurotrophic growth factors (BDNF) probably plays a role (Kimhy 2015). More interventional and longitudinal exploration is needed of the underlying mechanisms for brain health improvements in people with schizophrenia following exercise. Future research could investigate whether exercise, for example, reduces the inflammatory status of the brain by increasing levels of the anti-inflammatory cytokine interleukin-10.

Why it is important to do this overview

Due to an increasing demand from patients to use alternative or adjunct treatment to their medication (Elkins 2005), and a prevalence of poor antipsychotic compliance (Van Os 2009), adjunctive non-pharmacological options are increasingly of interest. Exercise is one such option. One Cochrane systematic review (Gorczynski 2010), and a number of non-Cochrane systematic reviews, of exercise for people with schizophrenia have been conducted (Dauwan 2016; Firth 2015; Firth 2017; Vancampfort 2015). Most of these 'exercise' reviews did not include yoga as an intervention despite yoga technically fulfilling the usual definitions of 'exercise.' Firth 2015 and Firth 2017 stated they excluded yoga as an 'exercise' as its effects may be derived from factors 'distinct from exercise.' We

consider this distinction is reasonable as yoga directly aims to confer effects on both the mind and body compared to other forms of exercise which usually are more directly aimed at physical effects. Reflecting this, the following specific systematic reviews in the yoga for people with schizophrenia topic area have been conducted, but included small numbers of randomised controlled trials, for example, five (Cramer 2013b) and three (Vancampfort 2012b). Similarly, one systematic review of yoga in major psychiatric disorders included only one randomised controlled trial for people with schizophrenia (Cabral 2011). The first Cochrane systematic review in the area was published in 2015 by some of the current team of this proposed overview (Broderick 2015). In terms of background information to the development of this overview, it was originally envisaged that one Cochrane systematic review entitled 'Yoga for people with schizophrenia' would adequately map this topic area. However, on closer evaluation, it became apparent that the yoga comparison included several distinct strands. Therefore, a pragmatic decision was taken to logically group comparisons into four independent reviews (Table 2), conducted by the same core group of authors, which could then inform this Cochrane Overview.

We proposed that the next logical step was, once all Cochrane reviews were completed, authors could conduct an overview, summarising the evidence from this portfolio of reviews into a single accessible document or friendly 'digest' or 'front end' (Becker 2011). This overview will not repeat the searches, assessment of eligibility, assessment of risk of bias or meta-analysis from the included Intervention reviews (Table 2), but will compile and collate the main findings from all subsidiary systematic reviews and if necessary, other forms of evidence to bring together existing evidence and bring novel insights to the existing data (Hunt 2018). Within this overview, we will also attempt to add value to current evidence by systematically investigating research gaps in this topic area, as well as identifying potential deficiencies in terms of the reporting of standard outcomes in systematic reviews and other forms of evidence accessed for the purposes of this overview. We will refer the reader back to individual reviews should more detailed information be required and propose some new methodology for overviews.

OBJECTIVES

Overall objective

To systematically summarise best evidence on the effects and safety of yoga for people with schizophrenia.

Primary objective

To summarise evidence from Cochrane systematic reviews on the effects of yoga for people with schizophrenia.

Secondary objectives

If Cochrane systematic reviews have not covered a relevant comparison, we aim:

1. to summarise evidence from non-Cochrane systematic reviews - which do not substantially overlap with the relevant Cochrane systematic reviews - on the effects and safety of yoga for people with schizophrenia;
2. to systematically identify gaps - though identification of relevant narrative reviews - in the evidence base that will inform recommendations for new reviews and trials; and
3. to summarise information on reported outcomes and make recommendations for the reporting of standard outcomes in future trials and reviews.

METHODS

Summary

Overview methodology continues to evolve due to the relatively recent emergence of this form of evidence synthesis. In preparation for conducting this overview, we conducted an extensive search of overview methodology from the *Cochrane Handbook for Systematic Reviews of Interventions* (Becker 2011), the Comparing Multiple Interventions Methods Group and other sources (such as, but not limited to, Aromataris 2015; Ballard 2017; Hartling 2014; Hunt 2018; Lunny 2017; Pieper 2012; Pieper 2014; Pollock 2016a; Pollock 2016b; Pollock 2017; Thomson 2010). Notably, key areas of overview methodology lack consistency and are subject to a range of limitations. This has resulted in heterogeneity in how and what evidence is presented at an overview level.

We will apply generic methods where possible to this overview (Becker 2011), and extend the work of previous overview methodology authors when no common solution has been proposed. In areas of methodological uncertainty, we will employ methodology based on solutions proposed by related literature or based on logical reasoning and prior experience of overview authors, or both. We are not sure if aspects of newer methodology proposed by this group of overview authors will be workable in practice, but nonetheless we will document them, and if modified, record such modifications. Learning as a result will make a valuable contribution to future overview development. It is likely that some methodological aspects proposed here will be transferable to future overviews, towards the development of more robust and systematic overview methodologies in the future.

Uniquely, we propose methods of searching through the hierarchy of evidence to provide a true 'birds eye' (overall) view of the subject area. From this search, we will be able to map the 'known known's' of this subject area. We do not claim that this will be exhaustive but just that it will be hypothesis-generating and list 'known known's,' some 'known unknowns' and even suggest 'unknown unknowns' (Rumsfeld 2002) on this topic.

There are inherent difficulties in predicting what comparisons are possible, sensible and entirely relevant to this overview but for which we have no randomised evidence. Such comparisons must represent 'relevant negatives' in this overview. For example, when overviewing the effects of a drug for people with schizophrenia it could be entirely relevant to consider randomised comparisons of dose and duration of treatment. Should such important questions not be addressed in trials, the overview will highlight these omissions. This issue may not be so clear cut for comparisons involving therapies. Nevertheless, we propose to use the generic structure as provided for us by the Cochrane Schizophrenia Group to suggest some potential comparisons (Table 1). Other possibly relevant comparator areas are means of delivery, duration/dose, timing/frequency and withdrawal. We have also entered some information into Table 1 regarding completed/in-progress Cochrane systematic reviews relevant to this overview.

It was hoped that stakeholder or patient and public involvement would be included to ensure aspects important to people with schizophrenia receiving this intervention are reflected in this overview (Harris 2016). Stakeholder involvement is a nebulous term of which the 'who' and 'when' is not clearly defined (Brett 2014). This could mean involvement of service users, expert practitioners and many others at the outset and planning stage to shape the overview protocol or on a continuous basis throughout the overview trajectory, or both. This could also involve lesser level stakeholder involvement to feed into the process at a more evolved stage. We hope to engage meaningfully with stakeholders at the outset and throughout the whole overview process, or at the very least employ stakeholder input in a more 'consultancy' role when the overview is more developed.

Criteria for considering reviews for inclusion

1. Forms of evidence

The primary units of analyses for this overview are systematic reviews. A systematic review is a discrete piece of work which gathers all empirical evidence that fits prespecified eligibility criteria to answer a specific research question. The key characteristics of a systematic review are: 1. a clearly stated set of objectives with predefined eligibility for studies, 2. an explicit, reproducible methodology, 3. a systematic search that attempts to identify all studies that would meet the eligibility criteria, 4. an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias and 5. a systematic presentation, and synthesis, of the characteristics and findings of all included studies (Green 2008).

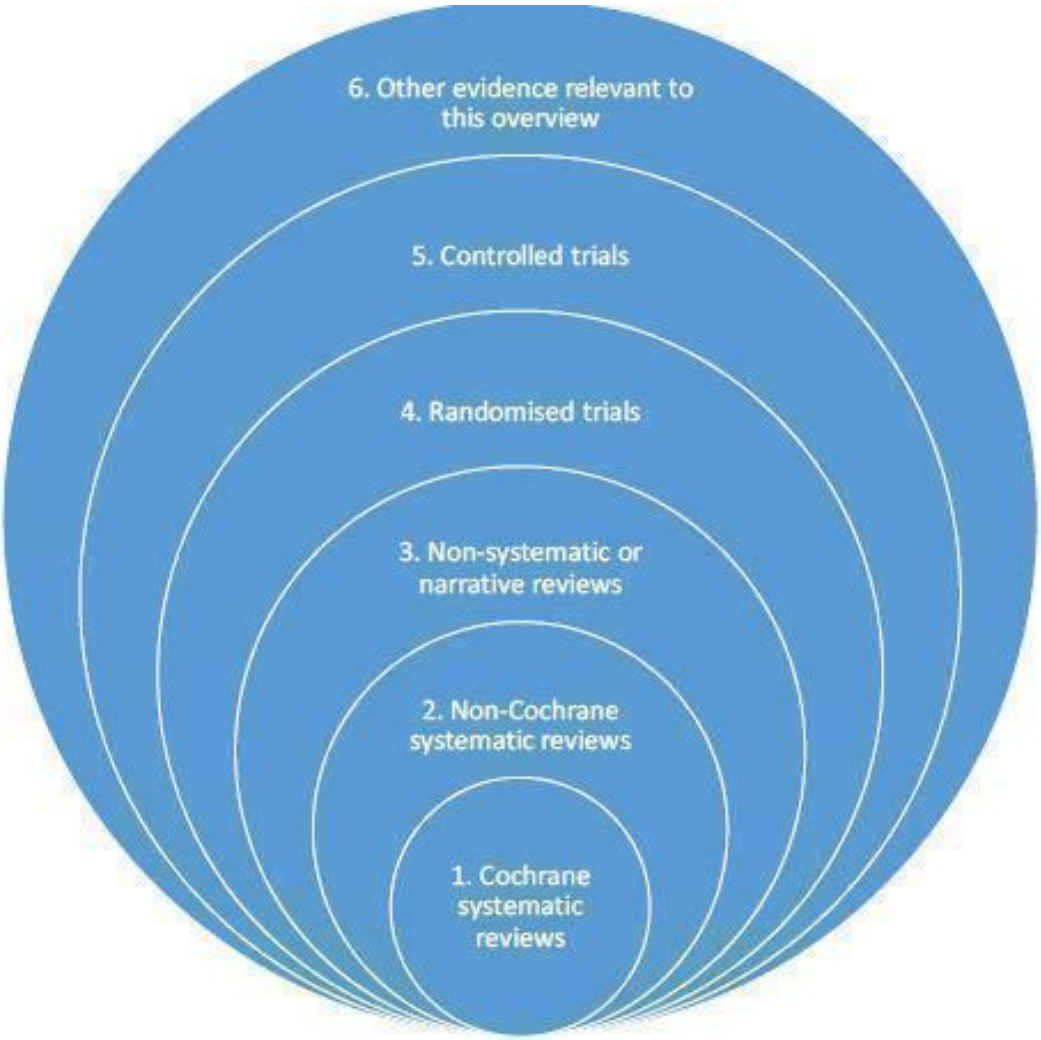
For Cochrane Overviews, a primary consideration is whether only Cochrane systematic reviews should be included due to their possible higher quality, consistency in methods and avoidance of overlapping systematic reviews and included trials (Pieper 2012).

However, a report from the Cochrane Comparing Multiple Interventions Methods Group (CMIMG) suggested that broadening the search in an overview to include individual studies may be appropriate in 'some cases' but systematic methods to include individual studies are not yet elucidated (CMIMG 2011). In agreement with Chapter 22 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Becker 2011), we will focus primarily on Cochrane systematic reviews, where possible, but this overview will also extend the work of Cooper 2012 in an attempt to produce a true comprehensive 'birds eye' view of this topic area. We will search for and consider other forms of evidence alongside Cochrane systematic reviews.

In order to do so in a methodical and practical way, we will apply the following a priori criteria.

We will consider all forms of evidence (outlined below) - and grade them from 1 (best evidence) to 6 (least good form of evidence) (see Figure 2).

Figure 2. Hierarchy of evidence to be considered in systematic overview.



1. We will preferentially include best evidence in the overview. Where best forms of evidence are available for the comparison, these will eclipse evidence from lower down in the hierarchy. For instance, if a Cochrane systematic review (evidence type number 1, Figure 2) is available for a comparison in question, this will eclipse all other forms of evidence in the evidence hierarchy (evidence type numbers 2 to 6). Likewise, if the highest evidence type available is evidence type number 2 (a non-systematic review, Figure 2), we will include details of this in the overview, which would eclipse all lower forms of evidence (evidence types 3 to 6).

2. If more than one systematic review of the same evidence type is the highest form of evidence available, covering the same comparison (for example, a Cochrane review covering a particular topic is unavailable and there are two non-Cochrane reviews (evidence type number 2) available covering the same comparisons), we will include the systematic review which scores highest on the AMSTAR (A Measurement Tool to Assess Reviews) tool (Shea 2007). If more than one randomised trial or other lower forms of evidence (evidence type numbers 4 to 6) are the highest form of available evidence for a comparison, the overview will describe these, but they will not be quality assessed.

3. If there is a situation where the highest form of evidence which is deemed suitable for inclusion in the overview is not up-to-date (i.e. if a randomised trial exists but is not yet added to a relevant systematic review), we will include details of this randomised trial in the overview.

1.1. Systematic reviews

1.1.1. Cochrane systematic reviews

Due to consistency in methods and inherent quality control of Cochrane systematic reviews, if a recent Cochrane systematic review adequately maps the specific comparison in question, we will include it preferentially in the overview.

1.1.2. Non-Cochrane systematic reviews

Systematic reviews of randomised controlled trials feature highly in the hierarchy of evidence. Where a Cochrane systematic review is not available for one or more comparisons relevant to this overview, we will include a non-Cochrane systematic review.

1.2. Other reviews (non-systematic or narrative reviews)

In the case that there are no available Cochrane systematic reviews or non-Cochrane systematic reviews which are relevant to this overview, we will include relevant non-systematic or narrative reviews for inclusion.

1.3. Non-reviews

1.3.1. Randomised trials

Randomised controlled trials are the gold standard of investigative clinical research (Moher 2001), and are the most rigorous way of testing if a cause-effect relationship exists in an experiment (Sibbald 1998). In an effort to comprehensively map the evidence, this overview will also include all clearly relevant randomised trials not yet listed in systematic reviews of 1. comparisons covered by a Cochrane systematic review, non-Cochrane systematic review or non-systematic review, and 2. which evaluate a comparison that is not evaluated at the review level.

1.3.2. Controlled trials

We will only consider quantitative studies of relevant comparisons, which do not involve randomisation involving at least one group of people treated with yoga compared with other treatments in the absence of any randomised evidence not yet listed in systematic reviews of 1. comparisons covered by a Cochrane systematic review, non-Cochrane systematic review or non-systematic review, and 2. which evaluate a comparison, which is not evaluated at the review level.

1.3.3. Evidence of other questions relevant to this overview

This will include both qualitative and quantitative descriptions of clinical dilemmas or practice. We will only include such descriptions or dilemmas where they are clearly relevant and practical to practice, and when no other forms of evidence have been identified. It is acknowledged that this area could be open to bias and will be based on expertise of review authors. This will include, but not limited to, incidental research findings or directions in the process of conducting this overview as well as areas which seem relevant but have not been discussed thus far.

2. Types of participants

People with a diagnosis of schizophrenia or related disorders, including schizophreniform disorder, schizoaffective disorder and delusional disorder, regardless of gender, age or severity of their illness, diagnosed by any means.

3. Types of interventions

3.1. Yoga

Yoga, however defined by the included studies, incorporating any of the major subtypes such as Hatha and Inengar. Yoga can also include a range of combinations of definitions including breathing exercises, body postures, or asanas or meditation (or both). We recognise that yoga integrated into a package of care could include many diverse approaches that could be considered inappropriate to synthesise.

3.2. Comparisons

Any comparisons included in relevant systematic reviews. In addition, we will include relevant comparisons identified from additional information either within the included systematic reviews, or other types of evidence (see Search methods for identification of reviews). We anticipate the comparisons within this overview to fall into broad categories as outlined in Table 1.

4. Types of outcome measures

We will use the primary outcomes and outcomes of importance within the 'Summary of findings' tables of relevant Cochrane systematic reviews. For this Yoga overview, the outcomes of importance used in the relevant Cochrane systematic reviews will be:

1. mental state: clinically important change (as defined by individual studies);
2. global state: relapse;
3. social functioning: clinically important change (as defined by individual studies);
4. adverse effects: any clinically important effect;

5. quality of life: clinically important change (as defined by individual studies);
6. physical health: clinically important change (as defined by individual studies);
7. costs of care: indirect or direct costs of care.

For relevant comparisons not addressed in Cochrane systematic reviews, we will present the closest outcome to those prespecified above and take this into account when grading the finding (see Criteria for considering reviews for inclusion). The pre-identified primary outcomes will be mental state, global state, social functioning and adverse effects.

We will divide outcomes into short term (less than six months), medium term (seven to 12 months) and long term (over one year) and take these directly from the 'Summary of findings' tables of the relevant Yoga Cochrane systematic reviews, listed in Table 2.

Search methods for identification of reviews

1. Systematic reviews

1.1. Cochrane systematic reviews

1. We will search the Cochrane Library using the following search strategy: *Yoga* in Title, Abstract and Index Terms of REFERENCE or in Interventions of STUDY to identify reviews and protocols of relevant reviews.
2. We will supplement this with a search on the Cochrane 'Archie' system to identify any titles of reviews underway.
3. The Cochrane Schizophrenia Group's Information Specialist will run a search for additional relevant trials not already included in the reviews identified by the above searches using the following search strategy: *Yoga* in Title, Abstract and Index Terms of REFERENCE or in Interventions of STUDY.

1.2. Non-Cochrane systematic reviews

1. We will perform searches for non-Cochrane systematic reviews in MEDLINE (Ovid), Embase (EMBASE.com), PsycINFO, Database of Abstracts of Reviews of Effects (DARE), Web of Science, PEDro and Epistemonikos. We will develop a search strategy initially for Embase utilising the CADTH systematic review search filter and then customise it for each database. The general principles of the search strategy to be used will consist of a combination of index and free-text terms to reflect the concepts of "yoga," "schizophrenia" and "systematic reviews." We will search the databases from their inception without restrictions, in particular with regard to language, publication period, etc. We will supplement these searches by a search for unpublished, ongoing or recently completed systematic reviews in PROSPERO. In addition, we will screen reference lists of included reviews to identify additional eligible systematic reviews.
2. We will undertake these searches, uploaded into a reference manager software, duplicate-checked and then manually searched for relevant systematically conducted reviews. We will acquire the full text of potentially relevant reviews and generate a final list of relevant systematic reviews.

2. Other reviews (non-systematic or narrative reviews)

We will perform searches for non-systematic reviews or narrative reviews in MEDLINE (Ovid), Embase, PsycINFO, Web of Science, PEDro and Epistemonikos. We will initially develop a search strategy using the previously identified index and free-text terms. We will then utilise the filters of the databases to identify these particular types of reviews.

3. Non-reviews

3.1. Randomised trials

We will search for randomised trials using the Group's trials register using the following search strategy: *Yoga* in Title, Abstract and Index Terms of REFERENCE or in Interventions of STUDY. The Cochrane Schizophrenia Group maintains a register of trials. This is compiled by systematic searches of major resources (including MEDLINE, Embase, AMED, BIOSIS, CINAHL, PsycINFO, PubMed and registries of clinical trials) and their monthly updates, handsearches, grey literature and conference proceedings (see Group Module). There are no language, date, document type or publication status limitations for inclusion of records into the register.

3.2. Non-randomised controlled trials

Searching for non-randomised studies in electronic databases is complicated because there is a variety of study designs and lack of standardisation in the terminology. We propose to use filters developed by Furlan 2006 to limit searches to comparative non-randomised studies.

3.3. Evidence of other questions relevant to this overview

As outlined above, searching for this type of evidence is non-systematic and subject to bias. We will not perform a search per se for this category but will base it on the intuition and judgement of the overview authors which will be gleaned iteratively from research/evidence searching conducted as part of writing this overview.

Data collection and analysis

Selection of reviews

Two overview authors (MW and JB) will independently and systematically inspect and scrutinise the full-texts of search results to examine if the reviews or other forms of evidence identified meet the inclusion criteria (see Criteria for considering reviews for inclusion). We will discuss any disagreements, document decisions and, if necessary, contact the relevant authors for clarification. We will discuss any outstanding disagreements with another overview author (CMD) and will document final decisions.

Data extraction and management

1. Collection/extraction

1.1. What data to extract

We will not present information about primary data from studies included within our included reviews, but we will provide a hyperlink to these original reviews. Based on a number of Cochrane guidance documents produced by Cochrane Child Health Field (CHF), Cochrane Comparing Multiple Interventions Methods Group (CMIMG) and Cochrane Effective Practice and Organization of Care Review Group (EPOC) and relevant non-Cochrane literature, we will extract and present collectively the following summary information.

1. Condensed details of subsidiary reviews/other forms of evidence - tabulated with hyperlinks to original reviews.
2. Risk of bias of from subsidiary review's 'Summary of findings' table/s*.
3. Quality judgement of each subsidiary review using AMSTAR criteria.
4. Relevant comparisons and information from excluded, ongoing or trials awaiting assessment within subsidiary Cochrane or non-Cochrane systematic reviews.
5. Relevant suggestions from reviews/other forms of evidence of comparisons which have not hitherto been evaluated.
6. Assessment of limitations including general limitations such as whether included reviews are up to date, and specific limitations relative to the specific objectives of the overview.

*If 'Summary of findings' tables do not exist, we will note this but take no further action.

One overview author (JB) will extract information outlined above from reviews/other forms of evidence where applicable and another overview author (MW) will verify that information is correct. We will resolve any disagreements by discussion and, where necessary, discuss disagreements with another overview author (CMD) and document final decisions.

1.2. Offsetting possible author biases in data extraction and concerns around out-of-date subsidiary reviews

We are very aware that a core group of overview authors have conducted or are in the process of completing Cochrane systematic reviews on yoga, which are likely to feature in this overview. It is possible there may be inherent difficulties in such authors rating the methodological quality of their own work. In an attempt to overcome - or at least ameliorate - potential biases associated with dual authorship (Buchter 2016), one of the overview authors (MW) who was not involved in any of the Cochrane systematic reviews will assess the methodological quality independently and another overview author not involved the original reviews (CMD) will check this.

Overviews are dependent on the searching and timing of the searches that were conducted as part of the systematic reviews. Typically, the search conducted for the purpose of writing an overview consists of Cochrane systematic reviews only and overviews are performed when there is a suite of up-to-date Cochrane systematic reviews (Thomson 2010), or the overview will be incomplete (Hartling 2014). Dealing with out-of-date systematic reviews is a recognised challenge of conducting overviews (Lunny 2017; Pieper 2012). To overcome this possible challenge, we have, or are in the process of, updating/completing subsidiary Cochrane systematic reviews, listed in Table 2 to ensure compliance with the two-year recommended timeframe for a review to be considered 'up-to-date' (Moher 2008). However, we do not claim this family of reviews will fully map the area - searches conducted during the course of the overview will confirm or refute this. Consistent with this timeframe, if it is more than two years since the publication of other forms of evidence included in this overview, we will note this but take no action further action.

1.3. Offsetting possible biases associated with overlapping reviews and studies

The issue of overlapping systematic reviews and studies is a point of debate (Pollock 2017). Several solutions have been proposed such as calculating the "corrected cover area" (Pieper 2014), and an algorithm has been previously proposed by Jadad 1997, but the merit of these approaches has not been fully demonstrated. In the system proposed in Criteria for considering reviews for inclusion, we will consider non-Cochrane systematic reviews for inclusion in the absence of a relevant Cochrane systematic review. If non-Cochrane systematic reviews are considered for inclusion, we will preferentially include the highest rating systematic review using AMSTAR (Shea 2007), as described in Criteria for considering reviews for inclusion. Therefore, systematic reviews are less likely to overlap using this approach. More recently it has been suggested that overlapping systematic reviews and studies may be less problematic than previously thought as long as data are not meta-analysed (Pieper 2014). We propose that a workable solution is

to highlight any overlap (Pieper 2014), but take no further action (McClurg 2016).

2. Management

2.1. Forms

We will record data on a standardised data collection form appended to the full review.

2.2. Presentation

We will present the following key summary tables. Where possible, we will take an infographical approach to presentation of data.

2.2.1. Overview table of comparisons

We will produce a comprehensive table, based on the Cochrane Schizophrenia Group's Generic table of comparisons (Table 1), updated with referenced relevant comparisons.

2.2.2. 'Characteristics of included reviews' table

We will develop a table which shows characteristics of included reviews, based on the template shown in Table 3, with the following column headings author, number of studies, population, intervention, control, outcomes and AMSTAR rating (Table 4) (Becker 2011).

2.2.3. 'Summary of findings' tables and graphs

For included systematic reviews that present a 'Summary of findings' table, we will use these tables and produce a 'master' 'Summary of findings' table based on the template shown in Table 5 (Becker 2011). For included non-Cochrane systematic reviews, covering topics of relevance to this overview and not covered by Cochrane systematic reviews, not including a 'Summary of findings' table, we will, from the data within the review, attempt to produce a 'Summary of findings' table. We will attempt to link each outcome within the 'Summary of findings' tables to their graphical presentation of those data.

2.2.4. Overview summary of findings

It is not yet clear how to present overview data. Without replicating "Summary of findings' tables and graphs' above, we propose to take the primary outcomes and outcomes of importance from all relevant comparisons and present these in one single table with the number of studies, number of participants, effect estimates and their confidence intervals, a measure of statistical heterogeneity across studies and quality ratings. In cases where subsidiary reviews are harmonised, we will homogenise summary statistics and present them side-by-side to aid interpretation (Hartling 2014). When a variety of summary statistics are presented such as odds ratios and risk ratios, where possible, we will convert the results into one summary statistic to facilitate comparability between results (Thomson 2010). If this is conducted we make a note of it. When outcomes are rare, it is suggested that a risk difference can be calculated (Thomson 2010).

A caveat to the presentation of the numbers of the above proposed tables and figures, we are cognisant that newer thinking from CMIMG recognises that the transitivity assumption/the joint randomisability of interventions should be investigated if data from different reviews are juxtaposed side-by-side in single tables/figures. This is because when data are presented in this way, implicit informal direct comparisons will be conducted which may or may not be appropriate. Before presenting results in this way, we will attempt to investigate and conceptually evaluate the validity of the indirect comparison (i.e. the transitivity assumption). If the transitivity assumption is not fulfilled, we will note this, and if considerable heterogeneity pertains, we will present reviews presented on a review-by-review basis where appropriate. For more detailed information pertaining to the transitivity assumption, see Data synthesis.

Assessment of methodological quality of included reviews

The methodology for conducting, interpreting and reporting quality within overviews is in its infancy (Pieper 2012). There are two levels of quality assessment to consider: quality assessment of evidence within included reviews and quality assessment at a review level. We will also consider limitations as well as identifying potential evidence gaps. We will consider how 'up-to-date' included reviews are as it is acknowledged that out-of-date reviews (more than five years since publication) may negatively influence the soundness of overviews (Pieper 2014).

1. Quality of included reviews

The importance of quality assessment of systematic reviews has been highlighted, but there is no consensus regarding which tool to use (Foisy 2014a; Pollock 2016a). The ROBIS tool was specifically designed to assess the risk of bias in systematic reviews (Whiting 2016), but conflicting reports state it can be a challenge to reach agreement between authors when using this tool (McClurg 2016). The AMSTAR instrument (Shea 2007) appears to be the most commonly recommended (Pollock 2016a), and displays high levels of agreement between reviews, which suggests it can be successfully used in overviews (Foisy 2014b). Therefore, we have elected to use the AMSTAR instrument in this overview.

AMSTAR evaluates the methods used in a review against 11 distinct criteria and assesses the degree to which review methods are unbiased (Table 4). Each item on AMSTAR is rated as yes (clearly done), no (clearly not done), cannot answer or not applicable. We aim to apply these criteria as follows.

1. For all items of the AMSTAR instrument except item 4, a rating of 'yes' is considered adequate.
2. For item 4 on the checklist (Table 4), a rating of 'no' (i.e. the review did not exclude unpublished or grey literature) is considered adequate. A review that adequately meets all of the 11 criteria is considered to be a review of the highest quality.
3. For this overview, as per Payne 2012, we will consider reviews that achieve scores of between 8 and 11 on the checklist as high quality; scores of 4 to 7 as medium quality and scores of 0 to 3 as low quality.
4. As reviews with low AMSTAR scores may be subject to important missing information (Foisy 2014b), we will require AMSTAR scores of greater than 3 for inclusion in this overview.

Two overview authors (MW and DM) will independently assess the quality of the included reviews using AMSTAR, and another overview author (CMD) will verify this assessment. We will resolve differences by discussion and consensus within our overview author group and, if needed, through arbitration by a third overview author (DVC).

We will identify and discuss differences in quality between reviews, and will use the review quality assessment to interpret the results of reviews when synthesised in this overview.

In non-Cochrane systematic reviews of trials, if some sort of reliable and validated grading of evidence has been undertaken, we will accept those ratings. Should no grading have been undertaken, AMSTAR scores will have to be greater than 7 for these data to be judged possible to include. We will not include evidence from non-Cochrane systematic reviews that has already been covered by Cochrane systematic reviews. Due to unwieldiness of quality assessing potentially a number of different forms of evidence, we will not assess the quality of evidence in randomised controlled trials and other forms of evidence in our hierarchy described in Criteria for considering reviews for inclusion).

2. Quality of evidence within included reviews

There is little consensus in terms of rating quality at a trial level. In Cochrane systematic reviews the evaluation of the quality of the evidence for each outcome using the GRADE approach will have been conducted a priori (Guyatt 2008). This approach uses four levels of quality (very low, low, moderate and high) over several domains. In agreement with Becker 2011, this overview will accept the judgements made in the included reviews. In included non-Cochrane sources of evidence, if some type of quality assessment tool has been used, we will accept these. If quality assessment has not been conducted, we will note and highlight this but take no further action.

Assessment of methodological quality of evidence outside of reviews

We will consider relevant comparisons not already within reviews but suggested by them or common-sense suggestions by the review's authors, such as those already in Table 1 and sought for (see also Search methods for identification of reviews). However, we will not rate any evidence from studies outside of randomised trials, and only been described and highlighted as gaps in research. Due to unwieldiness of quality assessing potentially a number of different forms of evidence, we will not assess the quality of evidence in randomised controlled trials and other forms of evidence in the hierarchy (Figure 2).

Data synthesis

Consensus and guidance in terms of data synthesis for overviews is lacking (Pollock 2016a). We will examine data synthesis considered in terms of a network meta-analysis approach versus a narrative synthesis.

1. Network meta-analysis

We will consider implementation of indirect comparisons and network meta-analysis in this overview. A network meta-analysis is an analysis which synthesises information over a network of comparisons to assess the comparative effects of more than two alternative interventions for the same condition. In network meta-analyses, using sophisticated statistical methods, direct (usually randomised) and indirect (observational) evidence are combined, leading to a potential increased precision of estimates of relative effects, allowing comparisons of interventions for which direct data are not available, and providing a ranking of all competing interventions (Efthimiou 2016; Salanti 2012).

Typical outputs of a network meta-analysis are:

1. relative intervention effects for all comparisons; and
2. a ranking of the interventions.

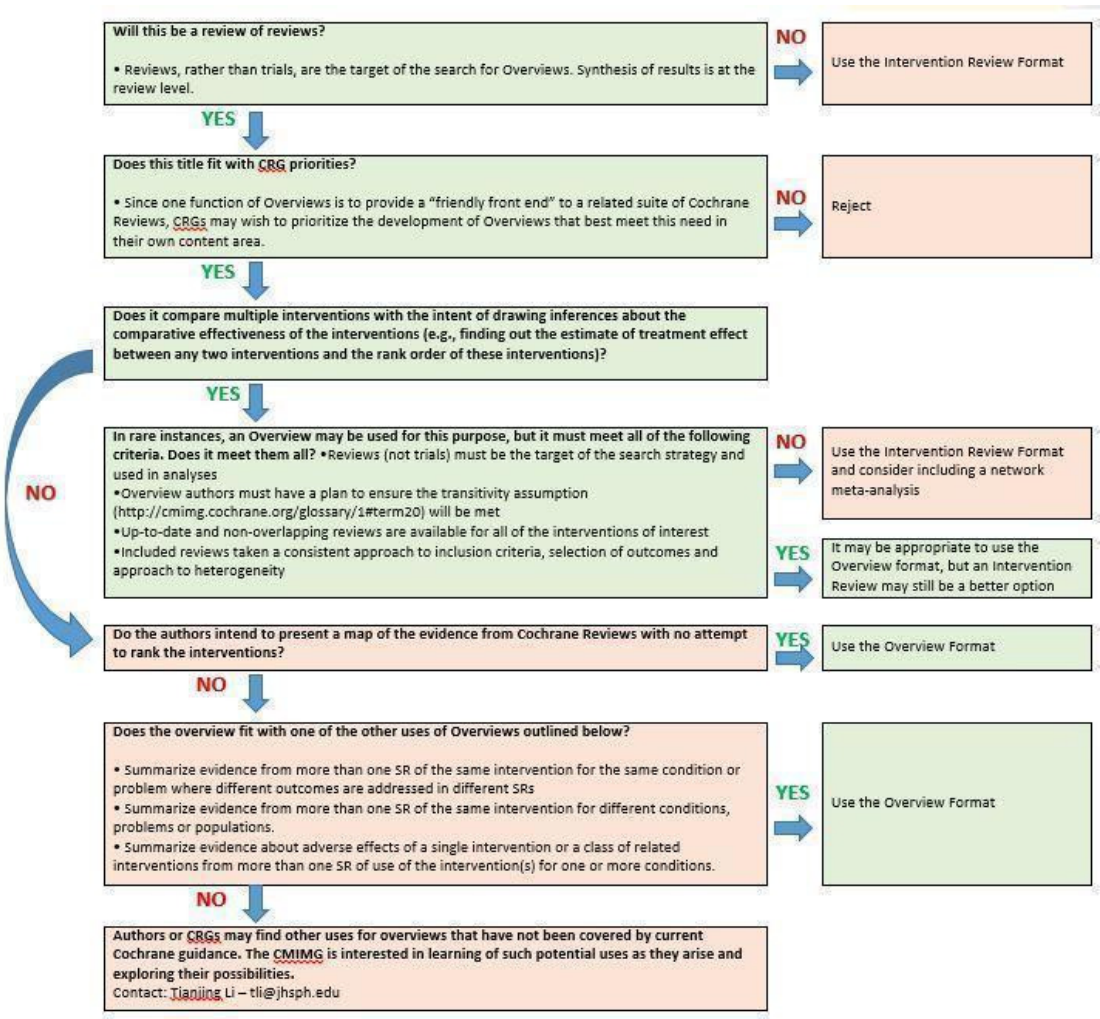
Underlying assumptions of network meta-analyses are transitivity and consistency.

1. Transitivity is a statistically non-testable assumption whose validity needs to be evaluated and properly discussed; it implies that when head-to-head comparisons have not been conducted a priori, information about a comparison can be indirectly obtained (e.g. AB comparison can be indirectly estimated by AC and BC comparisons) (Efthimiou 2016; Salanti 2012).
2. Consistency is defined as the statistical manifestation of transitivity, that is the statistical agreement between observed direct and indirect sources of evidence (Cipriani 2013). It allows for an additional indirect evaluation of the plausibility of the transitivity assumption and it needs to be assessed in each closed loop of the network plot (Efthimiou 2016; Mavridis 2015).

Previous work has found network analyses are ill-advised when data are few, there are few common comparisons, there are no

differences in the pair-wise comparisons and networks are insufficiently connected (Bergman 2017). We will follow a decision-making tree for overviews (Figure 3) developed by the CMIMG to advise on whether synthesis at a network meta-analysis level should take place. Because of authors' foreknowledge (Table 1), we believe that the possibility of meeting criteria based on these parameters is small but we will embark on network meta-analysis if the following exist:

Figure 3. Editorial decision tree for overviews. CMIMG: Comparing Multiple Interventions Methods Group; CRG: Cochrane Review Group; SR: systematic review.



1. data are many (more than 50 trials with sample sizes greater than 100); and
2. there is a median of five studies per comparison;
3. there are differences seen in pair-wise meta-analyses;
4. there are sufficiently connected networks;

5. transitivity and consistency assumptions hold, distribution of important effect modifiers (e.g. patients, interventions, outcomes, study design, methodological characteristics, reporting biases) is similar across comparisons.

Should these parameters be met, we will seek the help of a medical statistician with experience in this work. We will present both results and the list of assumptions made to achieve the network estimates.

2. Narrative synthesis

Should network analysis not be possible, we will not conduct a statistical analysis but undertake a narrative/qualitative synthesis with no attempt to rank interventions. Where possible, we will juxtapose review/trial results as described above. We will ensure information from tables is clearly articulated in the text to avoid misinterpretation (Crick 2015). As far as possible, we will rely on data reported in the individual systematic reviews. In rare cases, we anticipate that it may be necessary to reanalyse the data so comparable data are presented in the overview (Thomson 2010). Anticipated content of the discussion section is outlined in Table 6.

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The overview authors have also used and adapted their previous description of yoga, first published in 'Yoga versus standard care for schizophrenia' (Broderick 2015), and subsequent yoga reviews. The authors have also used text from these Cochrane Reviews for parts of the background in this overview.

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* *Indicates the major publication for the study*

ADDITIONAL TABLES

Table 1. Foreknowledge comparisons table

	Intervention	Control		Type of study	Reference and detail
Absolute effects	Yoga + standard care	Standard care		Cochrane systematic review	Broderick 2015 (currently being updated)
Relative effects	Yoga	Non-standard care		Cochrane systematic review	Broderick 2017a
		Expressive therapy*	Art		
			Dance		
			Drama		
			Music		
			Writing		

Table 1. Foreknowledge comparisons table (*Continued*)

		Talking therapy*	Talking treatments		
			Counselling		
			Psychological therapies or treatments		
			Psychotherapies		
		Exercise therapies*	Skill-related fitness		
			Health-related fitness		
			Body-mind fitness		
			Physical activity not necessarily fitness focused		
As part of another treatment or package of care/adjunct to another treatment where interaction effects are likely	Yoga as part of a package of care	Standard care		Cochrane systematic review	Broderick 2018b
		Non-standard care		Cochrane protocol	Broderick 2017c

*This list of specific interventions is not exhaustive and merely provides some examples of legitimate active comparators to yoga which are not currently available. These interventions could also be considered alternatively. For instance, exercise consists of heterogeneous interventions, it is accepted there could be other equally justifiable intervention titles such as 'supervised' exercise, 'non-supervised exercise,' or 'group-based exercise,' 'individual exercise,' or exercise could be considered in terms of intensity such as 'high intensity,' 'moderate intensity' and 'low intensity.' Note the specific intervention should be delivered by suitably qualified personnel.

Table 2. Yoga reviews

Review number	Review title	Status
1	Yoga versus standard care for schizophrenia	Broderick 2015
2	Yoga versus non-standard care for schizophrenia	Broderick 2017a
3	Yoga as part of a package of care versus standard care for schizophrenia	Broderick 2018b
4	Yoga as part of a package of care versus non-standard care for schizophrenia	Broderick 2017c

Table 3. 'Characteristics of included reviews' table

Column title	Review	Title, author	Date assessed as up to date	Population	Interventions	Comparison interventions	Outcomes for which data are reported	Review limitations
Explanation of column content	Reference ID for each included review	Review title and author details	Data on which the included review was assessed as up to date	Note any specific features of the population covered including inclusion and exclusion criteria	List specific interventions, whether identified and included	List type of comparison interventions used	List important outcomes for which the review presented data	Brief description of limitations of methods used in the Cochrane (or other) review

Table 4. AMSTAR checklist

1	**Was an 'a priori' design provided?** The research question and inclusion criteria should be established before the conduct of the review Note: need to refer to a protocol, ethics approval or predetermined/a priori published research objectives to score a "yes."	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
2	**Was there duplicate study selection and data extraction?** There should be at least 2 independent data extractors and a consensus procedure for disagreements should be in place Note: 2 people do study selection, 2 people do data extraction, consensus process or 1 person checks the other's work	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
3	**Was a comprehensive literature search performed?** At least 2 electronic sources should be searched. The report must include years and databases used (e.g. CENTRAL, MEDLINE, and Embase). Key words or MESH terms (or both) must be stated and where feasible the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialised registers or experts in the particular field of study, and by reviewing the references in the studies found Note: if at least 2 sources + 1 supplementary strategy used, select "yes" (Cochrane register/CENTRAL counts as 2 sources; a grey literature search counts as supplementary)	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
4	**Was the status of publication (i.e. grey literature) used as an inclusion criterion?** The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language, etc	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable

Table 4. AMSTAR checklist (*Continued*)

	Note: if review indicates that there was a search for "grey literature" or "unpublished literature," indicate "yes." SIGLE database, dissertations, conference proceedings and trial registries are all considered grey for this purpose. If searching a source that contains both grey and non-grey, authors must specify that they were searching for grey/unpublished literature	
5	**Was a list of studies (included and excluded) provided?** A list of included and excluded studies should be provided. Note: acceptable if the excluded studies are referenced. If there is an electronic link to the list but the link is no longer active, select "no."	Yes No Can't answer Not applicable
6	**Were the characteristics of the included studies provided?** In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions and outcomes. The ranges of characteristics in all the studies analysed e.g. age, race, sex, relevant socioeconomic data, disease status, duration, severity or other diseases should be reported Note: acceptable if not in table format as long as they are described as above	Yes No Can't answer Not applicable
7	**Was the scientific quality of the included studies assessed and documented?** A priori methods of assessment should be provided (e.g. for effectiveness studies if the author(s) chose to include only randomised, double-blind, placebo-controlled studies, or allocation concealment as inclusion criteria); for other types of studies alternative items will be relevant Note: can include use of a quality scoring tool or checklist, e.g. Jadad scale, risk of bias, sensitivity analysis, etc., or a description of quality items, with some type of result for EACH study ("low" or "high" is acceptable, if it is clear which studies scored "low" and which scored "high;" a summary score/range for all studies is not acceptable)	Yes No Can't answer Not applicable
8	**Was the scientific quality of the included studies used appropriately in formulating conclusions?** The results of the methodological rigor and scientific quality should be considered in the analysis and the conclusions of the review, and explicitly stated in formulating recommendations Note: might report, "the results should be interpreted with caution due to poor quality of included studies." Cannot score "yes" for this question if scored "no" for question 7	Yes No Can't answer Not applicable
9	**Were the methods used to combine the findings of studies appropriate?** For the pooled results, a test should be done to ensure the studies	Yes No Can't answer

Table 4. AMSTAR checklist (*Continued*)

	were combinable, to assess their homogeneity (i.e. Chi^2 test for homogeneity, I^2 statistic). If heterogeneity exists, a random-effects model should be used or the clinical appropriateness of combining should be taken into consideration (i.e. is it sensible to combine?), or both Note: indicate "yes" if they mention or describe heterogeneity, i.e. if they explain that they cannot pool because of heterogeneity/variability between interventions	▫ Not applicable
10	**Was the likelihood of publication bias assessed?** An assessment of publication bias should include a combination of graphical aids (e.g. funnel plot, other available tests) or statistical tests (e.g. Egger regression test, Hedges-Olken), or both Note: if no test values or funnel plot included, score "no". Score "yes" if mentions that publication bias could not be assessed because there were fewer than 10 included studies	▫ Yes ▫ No ▫ Can't answer ▫ Not applicable
11	**Was the conflict of interest included?** Potential sources of support should be clearly acknowledged in both the systematic review and the included studies Note: indicate "yes," if source of funding or support for the systematic review AND for each of the included studies reported	▫ Yes ▫ No ▫ Can't answer ▫ Not applicable

Table 5. Template for 'Overview of reviews' table

Interventions for [Condition] in [Population]							
Outcome	**Intervention and comparison intervention**	**Illustrative comparison risks (95% CI)**		**Relative effect (95% CI)**	**Number of participants (studies)**	**Quality of evidence (GRADE)**	**Comments**
		Assumed risk	**Corresponding risk**				
		With comparator	**With intervention**				
Outcome #1							
	Intervention/ comparison # 1						
	Intervention/ comparison # 2						

Table 5. Template for 'Overview of reviews' table (*Continued*)

	Etc.						
Outcome #2							
	Intervention/ comparison # 1						
	Intervention/ comparison # 2						
	Etc.						
Outcome #3							
	Intervention/ comparison # 1						
	Intervention/ comparison # 2						
	Etc.						

CI: confidence interval.

Table 6. Content of 'Discussion' section

Section heading/subheading	Content
Summary of main results	Concise summary of main findings. Balance between benefits and important harms. Highlight any outstanding uncertainties.
Overall completeness and applicability of evidence	Sufficiency of reviews to address objectives of the overview
	Gaps in evidence and how results fit into the context of current practice
	Relevance of types of participants, interventions and outcomes
	Relevance of the evidence in the overview.
Quality of evidence	Do reviews/evidence included allow a robust conclusion regarding objectives in overview

Table 6. Content of 'Discussion' section (*Continued*)

	Outline if all relevant studies were identified in the original review, whether all relevant data could be obtained
	Outline if methods used (e.g. searching, study selection, data collection and analysis) could have introduced bias
Potential biases in the overview process	Outline strengths and limitations of the overview with regard to preventing bias in the context of whether all relevant reviews were identified and included, whether all relevant data could be obtained, whether methods used (e.g. searching, study selection, data collection and analysis) were conducted with rigor
Agreements and disagreements with other studies or reviews	Comment on how included reviews fit into the context of other evidence, including whether the other evidence was systematically reviewed
Authors' conclusions	Present the conclusions of the authors of the overview.
Implications for practice	State practical and unambiguous implications for practice justifiable by the data presented in the overview
Implications for research	Address key clinical issues that remain unresolved after review of the evidence presented Identify any gaps in terms of reviews/primary data according to the hierarchy of evidence presented in Figure 2.Outline an agenda for future research.
Differences between protocol and review	As overview methods are not static and are developed as systematic review processes there are likely to be differences between the protocol and review which will be outlined in this section

APPENDICES

Appendix 1. Other possible interventions

1.1. Yoga plus other exercise

This will include yoga plus broad categories of exercise focused on health-related fitness (such as aerobic programme), mind and body fitness (such as Tai' Chi) and other physical activity not necessarily focused on fitness. We recognise that these categories may not fully map this area and propose to keep each of the above categories separate as they represent quite different approaches.

1.2. Yoga plus talking therapy

This will include yoga plus broad categories of cognitive-behavioural, humanistic, insight-oriented, postmodernist, systemic and other. We propose to keep each of these categories separate as they represent quite different approaches.

1.3. Yoga plus expressive therapies

This will include yoga plus broad categories of art, dance, drama, music and writing therapies. We propose to keep each of these categories separate as they represent quite different approaches.

1.4. Yoga plus combination of above

Should at least five trials in any of these areas of non-standard care become available, an independent review will be conducted.

2. Standard-care control group

We will define standard care as the care participants normally receive or had previously received for the management of their schizophrenia, without yoga intervention. This could also include wait-list control.

3. Non-standard care or approaches in addition to standard care

It is accepted that non-standard care could be considered an ambiguous term. We propose the following breakdown, but recognise that this may not be entirely inclusive.
3.1. Talking therapy.
3.2. Expressive therapies.
3.3. Other exercise (not including yoga).
3.4. Combination of above.

CONTRIBUTIONS OF AUTHORS

Julie Broderick: writing the protocol.

Davy Vancampfort: contributed to the writing of the protocol.

David Mockler: contributed to the writing of the protocol.

Kathleen Bennett: contributed to the writing of the protocol.

Alice Waugh: contributed to the writing of the protocol.

Catherine McDonough: contributed to the writing of the protocol.

Holger Cramer: contributed to the writing of the protocol.

Margaret Walshe: contributed to the writing of the review.

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